

## Summary

An I-75 Corridor Feasibility Study<sup>1</sup>, completed in November 2000, articulated the need for additional freeway capacity in Oakland County to provide safe and efficient traffic movement. The I-75 Feasibility Study showed that in the horizon year of 2025, the present roadway will operate at a level-of-service (LOS) E or worse during the afternoon peak hour for almost the entire length of I-75 from M-102 (8 Mile Road) to M-24 and from Baldwin Road to Sashabaw Road (Figure 1-1). North of Sashabaw Road, the computer models indicated that I-75 will operate under capacity in the 2025 afternoon peak hour, but further analysis revealed that the traffic in the 30th highest hour will exceed capacity in 2025. This latter peaking is associated more with recreational than commuter travel. Given this traffic growth experience, it is expected that all of I-75 will be over capacity in 2025.

The I-75 Feasibility Study indicated that it is difficult for transit to obviate the need to expand I-75 by one lane in each direction in most sections because the travel demand in the corridor is so much greater than this solution can address. But, it was equally clear that the technical tools for evaluating transit and HOV proposals were limited in their sophistication. For example, SEMCOG's travel demand system lacked a technique such as a modal split model to forecast the use of high-type transit and high-occupancy vehicle (HOV) facilities.

Today, SEMCOG is in the midst of developing an entirely new travel demand-forecasting model, using a software package called TransCAD. SEMCOG's new system will include a mode-choice model and should provide the tools needed for a comprehensive and detailed analysis of transit and HOV facilities in the region. But, because of the time needed to develop and validate such models, they are not available. So, MDOT's consultant, The Corradino Group (Corradino) implemented transit/HOV models to supplement SEMCOG's most up-to-date data and networks. It is important to note that this approach is used in a number of major urban areas without in-place models.

Using the new models, Technical Memorandum No. 1 documented that rapid transit in the Woodward Avenue Corridor is viable. But, it does not eliminate the need for an additional lane on I-75. The analysis also indicated HOV facilities in the peak periods, at least between I-696 and M-59, appeared viable and needed further testing.

This report begins with the results of Technical Memorandum No. 1 and continues the evaluation of transit or the use of high-occupancy-vehicle facilities/services to obviate the need to widen I-75. It is prepared in response to comments on Technical Memorandum No. 1 and to the scoping information received from the public, the I-75 Council, and by various governmental/resource agencies responsible for guidance/review of the Environmental Impact Statement. It includes a number of changes to SEMCOG's highway network to further align it with conditions on the ground and in the planning stage.

<sup>1</sup>I-75 Corridor Study in Oakland County; prepared for the Michigan Department of Transportation, SEMCOG, the Road Commission for Oakland County and The Traffic Improvement Association of Oakland County; by The Corradino Group; November 2000.

## Transit Analysis

For this Technical Memorandum No. 2, a significant increase in feeder service was added in Oakland County, particularly north of 13 Mile Road where the baseline network was relatively thin. Table S-1 summarizes the regional results of this update, which indicate that the improved feeder bus connections to the Woodward Avenue rapid transit system would cause increases of about seven percent in daily transit trips and over 15 percent in rapid transit use in 2025.

Table S-1  
Rapid Transit and HOV Concepts  
I-75 PM Peak Hour Characteristics (2025)

Measures	Simulations		
	No Action	Rapid Transit T.M. No. 1	Rapid Transit Updated
Regional Daily Transit Trips (Linked) <sup>1</sup>	117,682	154,667	164,945
Regional Transit Boardings (Unlinked) <sup>2</sup>	177,285	246,440	272,020
Woodward Rapid Transit Boardings	NA	43,035	49,782
DPM Boardings	10,967	9,930	9,608

Source: The Corradino Group of Michigan, Inc.

<sup>1</sup>Origin to destination.

<sup>2</sup>Stop to stop.

The change in feeder bus service affects rapid transit's station-by-station use as previously forecast in Technical Memorandum No. 1 (Figure S-1 and Table S-2). From downtown Detroit to 7 Mile Road, rapid transit's two-way loading changes by up to 15 percent. North of 7 Mile Road, the percentage changes are larger, with two-way daily loadings holding at about 5,000 riders up to 14 Mile Road. From there, they decline to approximately 2,000 riders at the Pontiac terminus. Nevertheless, even with the additional and significant amount of feeder bus service serving optimum rapid transit operating in Woodward Avenue, the traffic on I-75 is not affected. And, using the traffic standard of Level of Service D (the design target for I-75), an additional lane is needed on I-75.

## Updated HOV Analysis

The previous analyses documented in Technical Memorandum No. 1 indicated that further study of HOV in the peak periods is necessary. The options given further consideration are:

**HOV Option A** – This option calls for the HOV lane to be added between M-102 (8 Mile Road) and M-15 with modifications at each interchange in this section, but not including M-102 (called Full-Access HOV). This section of I-75 was chosen because the analysis covered in Technical Memorandum No. 1 indicated HOV was at least marginally effective here.

**HOV Option B** – This option calls for the HOV lane to be added between I-696 and M-59, with interchange modifications at those and all interchanges in between. This section of I-75 demonstrated in the earlier analysis (Technical Memorandum No. 1) that it had the greatest potential for successful



Table S-2  
Rapid Transit Station Activity

Node	Location	Access	Daily Ons + Offs	Daily 2-way Loadings T.M. No. 1	Daily 2-way Loadings Updated
15101	Pontiac Transp. Center	Auto Walk, Bus	2,204		
				1,046	2,204
15104	Square Lake Road	Auto, Walk, Bus	3,047		
				1,028	2,567
15105	Long Lake Road	Auto, Walk, Bus	244		
				1,036	2,645
15106	Big Beaver	Auto, Walk, Bus	674		
				1,020	2,747
15107	Maple Road	Auto, Walk, Bus	1,533		
				1,037	3,586
15108	14 Mile	Auto, Walk, Bus	2,339		
				1,140	4,675
15109	13 Mile	Auto, Walk, Bus	3,968		
				2,750	6,517
15110	12 Mile	Auto, Walk, Bus	3,511		
				3,401	7,254
15111	11 Mile	Auto, Walk, Bus	1,252		
				3,552	7,428
15139	10 Mile	Auto, Walk, Bus	1,312		
				4,048	7,902
15112	9 Mile	Auto, Walk, Bus	5,217		
				6,835	8,933
15113	M-102 (8 Mile)	Auto, Walk, Bus	4,395		
				10,248	12,016
15114	7 Mile	Walk, Bus	3,892		
				11,732	13,594
15115	McNichols	Walk, Bus	4,851		
				13,212	15,119
15117	Woodland Ave.	Walk, Bus	1,693		
				14,152	15,914
15116	Trowbridge	Walk, Bus	2,889		
				16,204	17,749
15118	Hazelwood	Walk, Bus	4,243		
				18,165	19,508
15119	Mount Vernon	Walk, Bus	4,661		
				19,998	21,169
15120	Grand Blvd.	Walk, Bus	3,039		
				19,793	20,868
15121	Antoinette	Walk, Bus	4,901		
				20,024	20,901
15122	Warren	Walk, Bus	6,306		
				21,608	22,295
15123	Alexandrine	Walk, Bus	3,841		
				21,731	22,258
15124	Mack	Walk, Bus	511		
				21,759	22,237
15125	Alfred	Walk, Bus	5,018		
				21,869	22,145
15126	I-75	Walk, Bus	1,639		
				20,954	21,206
15135	Grand Circus Park	DPM, Walk	4,884		
				16,130	16,376
15136	Campus Martius	Walk, Bus	12,321		
				5,059	5,179
15137	Jefferson Ave.	Walk, Bus	5,179		

Source: The Corradino Group of Michigan, Inc.

HOV treatment. At I-696 special ramps to the HOV lane would be provided to/from the north. At M-59 the special ramps would be from the south. These ramps would allow exclusive access to the HOV lane.

HOV Option C – This option calls for striping and signing the HOV lane (called Basic HOV) with no exclusive access facilities to/from any interchange along the length of I-75 from M-102 to M-15. Again, earlier analysis indicated this section of I-75 has some potential for successful HOV treatment.

The analysis reported on in this report of travel demand indicates all three concepts are viable. But, the potential impacts of the Full-Access Options A and B could have the following impacts between M-102 and M-59 (Table S-3):

- ✍ 24 business structures
- ✍ 78 single-family dwellings
- ✍ 74 multiple-family dwellings
- ✍ 3 churches, and
- ✍ 3 institutions (school land, an Elks Club and land from a cemetery).

Table S-3  
Possible Impacts of Options A and B: Full-Access I-75 HOV

Location	Impact					Cost (\$Mil) <sup>1</sup>
	Business Structures	Single-family Dwellings	Multi-family Dwellings	Churches	Institutions	
North side of M-102	1	8	0	0	0	\$ 30.0
9 Mile Road	13	7	0	1	0	
South side of I-696 Interchange	1	26	0	0	0	\$ 25.7
North side of I-696 Interchange	0	17	0	1	1	\$ 44.6
11 Mile Road area	4	20	0	0	1	\$ 26.0
12 Mile Road Interchange	0	0	0	1	0	\$ 17.7
14 Mile Road Interchange	0	0	0	0	0	\$ 17.5
Stephenson/Rochester	5	0	0	0	0	\$ 8.0
Big Beaver area	0	0	52	0	0	\$ 19.6
Crooks/Long Lake area	0	0	0	0	1	\$ 16.0
Adams/Square Lake area	0	0	0	0	0	\$ 16.0
Square Lake Interchange	0	0	22	0	0	\$ 11.2
South side of M-59 Interchange	0	0	0	0	0	\$ 2.2
North side of M-59 Interchange	0	0	0	0	0	\$ 27.1
South Corridor Pedestrian Bridge						
Additional Costs	NA	NA	NA	NA	NA	\$ 0.8
M-102 to M-59	24	78	74	3	3	\$ 262
I-696 to M-59	9	37	74	2	3	\$ 179

Source: The Corradino Group of Michigan, Inc.

<sup>1</sup>Cost to construct, exclusive of right-of-way.

Between M-102 and M-59, an additional eight acres of wetlands could also be impacted over and above that likely to occur with the proposed widening of I-75 by one lane without special HOV treatment. The affected wetlands are found especially in the section north of Big Beaver Road.

The total cost of special HOV access treatment could total over \$260 million, exclusive of right-of-way. This would double the cost of widening I-75 by one lane in each direction between M-102 and M-59 (\$250 million) before property acquisition/relocation is considered. If special access ramps were carried farther north to M-15, the costs and impacts would be even greater. On the other hand, if the special HOV access treatment were limited to the I-75 section between I-696 and M-59, the construction cost (i.e., exclusive of right-of-way) would be almost \$180 million over the cost to widen I-75 by one lane in each direction.

The capital cost associated with the Basic HOV is \$8.5 million which includes about \$3 million to carry the HOV lane over or under the left exit at Square Lake Road. The annual cost to enforce the "2-plus" person rule is estimated at \$4 million. But, even if enforcement were reduced to the extent that violators of the "2-plus person" rule average 20 percent of the vehicles in the HOV lane, the annual enforcement cost could still exceed \$1 million per year. Federal funding assistance may be available for enforcement. There would be virtually no difference in impacts between adding a new lane to I-75 for HOV versus for general purpose use.

## Conclusion

Based on the refined analyses discussed in this report, which includes significant increases in feeder bus service compared to work done earlier, it is concluded that rapid transit in the Woodward Avenue corridor will not eliminate the need for an additional lane on I-75.

For the HOV concepts, the situation is such that the volumes on I-75 in 2025, and on many roads in Oakland County, are expected to be so large that the slightest opportunity to gain an advantage will be taken. So, the Basic HOV lane (Option C), with even the smallest advantage, fills up. It is expected to encounter virtually no difference in impacts and construction cost compared to the option of adding the lane for general purpose use. On the other hand, the impacts and cost of providing Full-Access HOV (Options A and B) by constructing special ramps to the new, added lane, make it infeasible in any segment of I-75. And, it generates virtually no additional use compared to the Basic HOV alternative because the volume in 2025 in every lane on I-75, regardless of restriction, is at or above LOS D, i.e., there is little room for more vehicles in any lane and the speeds are all constrained.

Therefore, the consultant recommends that: 1) the Full-Access HOV concept should be dropped from further analysis; 2) rapid transit in the Woodward Corridor should be included in the continuing work as part of the background transportation system but not as an alternative to widening I-75; and, 3) the Basic HOV concept, between M-102 (8 Mile Road) and M-15, should be advanced in the continuing environmental analysis leading to a DEIS. This upcoming work will help define the hours of HOV operations, enforcement needs, and other issues such as federal approval of converting the now-existing fourth mainline lane on I-75, between South Boulevard and M-59, to an HOV lane.